What is claimed is:

1. A fluoropolymer suitable for the preparation of a fluoroelastomer, said fluoropolymer comprising repeating units derived from:

(a) 10 to 40 mol% of tetrafluoroethylene;

(b) 40 to 65 mol% of vinylidene fluoride;

(c) 1 to 30 mol% of a perfluorinated vinyl ether of the formula CF_2=CFO$CF_2CF_2CF_2OCF_3$; and

(d) 1 to 20 mol% of perfluoromethyl vinylether.

2. The fluoropolymer of claim 1, wherein components (c) and (d) combined comprise at least about 13 mol%.

3. The fluoropolymer of claim 1, wherein (c) is 7 to 30 mol% and (d) is 1 to 15 mol%.

4. The fluoropolymer of claim 3, wherein component (c) is pre-emulsified into a water based system containing a fluorinated surfactant.

5. The fluoropolymer of claim 4, wherein said fluorinated surfactant includes non-telogenic fluoroemulsifiers.

6. The fluoropolymer of claim 1, wherein (c) is 1 to 7 mol% and (d) is 10 to 20 mol%.

7. The fluoropolymer of claim 6, wherein component (c) is introduced into a polymerization system as a hot aerosol without any fluoroemulsifiers.

8. The fluoropolymer of claim 1, wherein said fluoropolymer has a bimodal or multimodal molecular weight.

9. The fluoropolymer of claim 1, further comprising a cure site monomer.

10. The fluoropolymer of claim 9, wherein said cure site monomer is 1-bromo-2,2-difluoroethylene (CF_2=CHBr, BDFE), 4-bromo-3,3,4,4-tetrafluorobutene-1 (CH_2=$CHCF_2CF_2Br$, BTFB), bromotrifluoroethylene (CF_2=CFBr, BTFE), 4-iodo-3,3,4,4-tetrafluorobutene-1 (CH_2=$CHCF_2CF_2I$, ITFB), perfluoro (2-bromoethyl vinyl ether) (CF_2=$CFOCF_2CF_2Br$, BEVE), perfluoro (3-iodopropyl viny ether) (CF_2=$CFO(CF_2)_3I$, or combinations thereof.

11. The fluoropolymer of claim 1, further comprising a chain transfer agent.

12. The fluoropolymer of claim 11, wherein iodine, bromine, or both are chemically bound to polymer chain ends using said chain transfer agent derived from one or more bromine or iodine of the formula:

R_fBr_x and R_fI_x (Formula A) wherein R_f is a X-valent fluoroalkylradical C_1-C_{12}, optionally containing chlorine atoms, while X is 1 or 2, or

RBr_nI_m (Formula B) wherein R represents a fluoro hydrocarbon, chlorofluoro hydrocarbon or a hydrocarbon and each of n and m is 0.1 or 2, or combinations thereof.

13. A fluoroelastomer comprising repeating units derived from:

(a) 10 to 40 mol% of tetrafluoroethylene;

(b) 40 to 65 mol% of vinylidene fluoride;

(c) 1 to 30 mol% of a perfluorinated vinyl ether of the formula CF_2=$CFOCF_2CF_2CF_2OCF_3$; and

(d) 1 to 20 mol% of perfluoromethyl vinylether.

14. A fluoroelastomer of claim 13, wherein components (c) and (d) combined comprise at least about 13 mol%.

15. The fluoroelastomer of claim 13, wherein (c) is 7 to 30 mol% and (d) is 1 to 15 mol%.

16. The fluoroelastomer of claim 13, wherein (c) is 1 to 7 mol% and (d) is 10 to 20 mol%.

17. The fluoroelastomer of claim 13, wherein said fluoroelastomer has a T_g of about –25°C or lower.

18. The fluoroelastomer of claim 13, wherein said fluororelastomer has a solvent swell according to ASTM D471-98 in FUEL K (CM85) of about 60% or less.

19. The fluoroelastomer of claim 13, wherein said cure composition is a peroxide cure composition containing brominated units, iodinated units, or combinations thereof.

20. The fluoroelestomer of claim 13, further comprising a cure site.

21. The fluoroelastomer of claim 20, wherein said cure site is derived from 1-bromo-2,2-difluoroethylene (CF_2=CHBr, BDFE), 4-bromo-3,3,4,4-tetrafluorobutene-1 (CH_2=$CHCF_2CF_2Br$, BTFB), bromotrifluoroethylene (CF_2=CFBr, BTFE), 4-iodo-3,3,4,4-tetrafluorobutene-1 (CH_2=$CHCF_2CF_2I$, ITFB), perfluoro (2-bromoethyl vinyl ether) (CF_2=$CFOCF_2CF_2Br$, BEVE), perfluoro (3-iodopropyl viny ether) (CF_2=$CFO(CF_2)_3I$, or combinations thereof.

22. The fluroelastomer of claim 13, further comprising a functional end group.

23. The fluoroelastomer of claim 22, wherein said functional end group is derived from one or more bromine or iodine of the formula:

R_fBr_x and R_fI_x (Formula A) wherein R_f is a X-valent fluoroalkylradical C_1-C_{12}, optionally containing chlorine atoms, while X is 1 or 2, or

RBr_nI_m (Formula B) wherein R represents a fluoro hydrocarbon, chlorofluoro hydrocarbon or a hydrocarbon and each of n and m is 0.1 or 2, or combinations thereof.

24. A fluoroelastomer composition comprising repeating units derived from:

(a) 10 to 40 mol% of tetrafluoroethylene;

(b) 40 to 65 mol% of vinylidene fluoride;

(c) 1 to 30 mol% of a perfluorinated vinyl ether of the formula CF_2=$CFOCF_2CF_2CF_2OCF_3$; and

(d) 1 to 20 mol% of perfluoromethyl vinylether, wherein components (c) and (d) combined comprise at least about 13 mol% and said fluoroelastomer has a T_g of about –25°C or lower.

25. The fluoroelastomer of claim 24, wherein said fluororelastomer has a solvent swell according to ASTM D471-98 in FUEL K (CM85) of about 60% or less.

26. A method of making a fluoropolymer as defined in claim 1, comprising free radical polymerization of tetrafluoroethylene, vinylidene fluoride, a perfluorinated vinyl ether of the formula $CF_2=CFOCF_2CF_2CF_2OCF_3$, and perfluoromethyl vinylether in amounts appropriate so as to obtain a fluoropolymer having the composition as defined in claim 1.

27. The method of claim 26, wherein the free radical polymerization is an aqueous suspension polymerization or aqueous emulsion polymerization.

28. The method of claim 26, wherein the perfluorinated vinyl ether is pre-emulsified and added before polymerization.

29. The method of claim 26, wherein said fluoropolymer is prepared as a core-shell material.

30. The method of claim 26, wherein said polymerization is performed in the presence of I or Br salts.

31. The method of claim 26, wherein the fluoropolymer further comprises a cure site monomer.

32. The method of claim 31, wherein said cure site monomer is 1-bromo-2,2-difluoroethylene ($CF_2=CHBr$, BDFE), 4-bromo-3,3,4,4-tetrafluorobutene-1 ($CH_2=CHCF_2CF_2Br$, BTFB), bromotrifluoroethylene ($CF_2=CFBr$, BTFE), 4-iodo-3,3,4,4-tetrafluorobutene-1 ($CH_2=CHCF_2CF_2I$, ITFB), perfluoro (2-bromoethyl vinyl ether) ($CF_2=CFOCF_2CF_2Br$, BEVE), perfluoro (3-iodopropyl viny ether) ($CF_2=CFO(CF_2)_3I$, or combinations thereof.

33. The method of claim 26, wherein the fluoropolymer further comprises a chain transfer agent.

34. The method of claim 33, wherein iodine, bromine, or both are chemically bound to polymer chain ends using said chain transfer agent derived from one or more bromine or iodine of the formula:

R_fBr_x and R_fI_x (Formula A) wherein R_f is a X-valent fluoroalkylradical C_1-C_{12}, optionally containing chlorine atoms, while X is 1 or 2, or

RBr_nI_m (Formula B) wherein R represents a fluoro hydrocarbon, chlorofluoro hydrocarbon or a hydrocarbon and each of n and m is 0.1 or 2, or combinations thereof.

35. A method for forming a fluoroelastomer comprising vulcanizing the fluoropolymer of claim 1 with a cure composition.

36. A method according to claim 35, wherein an organic peroxide is utilized for vulcanization of said fluoropolymer.